CONTRIBUTION INFORMATIONS

AUTHORS: Nunes, L.; Caeiro, S.; Caetano, M.; Martins, F.; Castro, O.; Costa, M. H.; Vale, C.

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Corresponding author:

Name: Luis Nunes

Address: Faculty of Marine and Environmental Sciences, University of Algarve, Campus de Gambelas, 8005-139 FARO

E-mail: lnunes@ualg.pt

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SPATIAL AND TEMPORAL ASSESSMENT OF SEDIMENT CONTAMINATION IN SADO ESTUARY: A METHODOLOGICAL APPROACH

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Estimation of estuarine sediment contamination using complementary (not necessarily correlated) information

NUNES, L.[1]*; CAEIRO, S.[2]; COSTA, M. H.[3]; CAETANO, M.[4]; MARTINS, F.[5]; CASTRO, O.[4]; VALE, C.[4]

1 – FCMA, Universidade do Algarve, Campus de Gambelas, 8005-139 FARO
2-IMAR, DCET, Portuguese Distance Learning University, R. Escola Politecnica 147, 1269-001 Lisbon, Portugal
3- IMAR, FCT, New University of Lisbon, Quinta da Torre 2829-516 Caparica, Portugal.
4 – IPIMAR
5 – EST, University of Algarve, Campus da Penha, 8000 Faro, Portugal

* lnunes@ualg.pt

For better management of estuarine ecosystems their contamination assessment should be easily communicated to local managers and decision makers. The problem is the lack of available data and the search of methodologies to enable that assessment using only few data. The Sado estuary in Portugal is as good example of a site where human pressures and ecological values collide with each other and where the degree of metal and organic contamination has not been subject to an overall assessment, either in terms of spatial or temporal variability, in a way that managers can understand. The aim of this work is to develop a methodology to compute maps of contamination base on sparse data collected in different years, to allow the understanding of the contamination behaviour along the last decades in Sado Estuary. The method is based on the use of complementary information (e.g., hydrodynamic) to determine anisotropy coefficients when modelling variograms with very few, or severely aligned, data. This approach has long been used in other earth sciences, but hasn't had applications in contamination studies. Its applicability will be discussed and

some applications presented. Temporal datasets from different sources and with different sampling sites are used to estimate heavy metals concentrations in areas where no information is initially available.